Written on August 24, 2016 at 7:00 pm by Navy Medicine

The Mosquito Fighters: A Short History of Mosquitoes in the Navy – Part 1

Filed under Families, Force health and safety, Health {no comments}

By Andre B. Sobocinski, historian, Bureau of Medicine and Surgery

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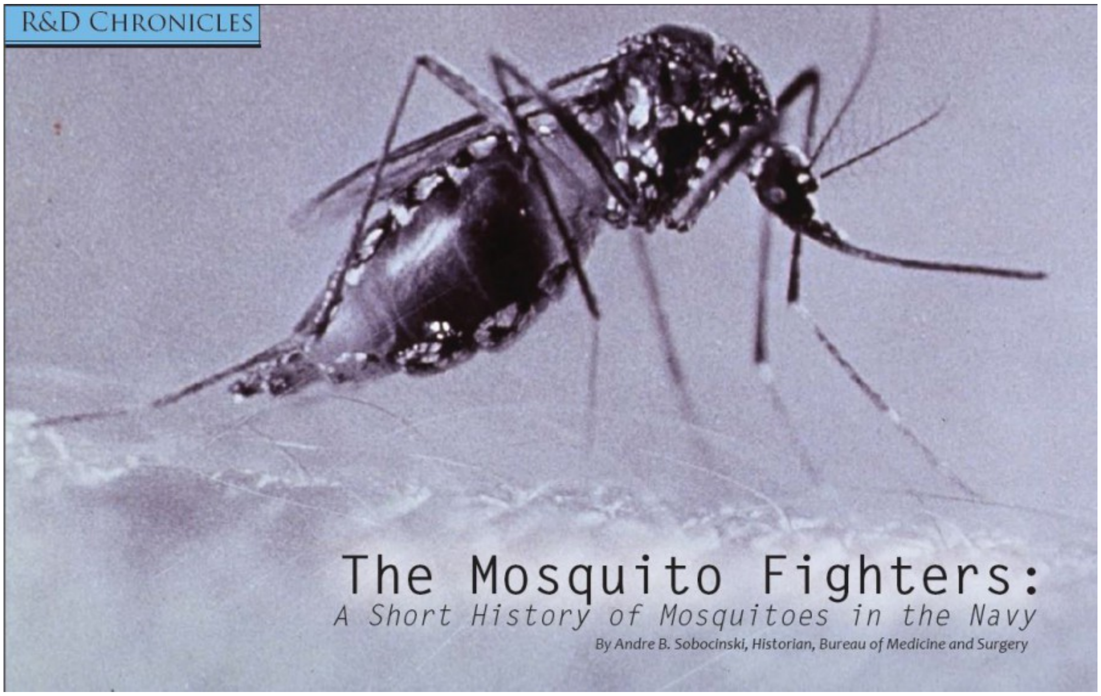

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The Mosquito Fighters:

A Short History of Mosquitoes in the Navy

By Andre B. Sobocinski, Historian, Bureau of Medicine and Surgery

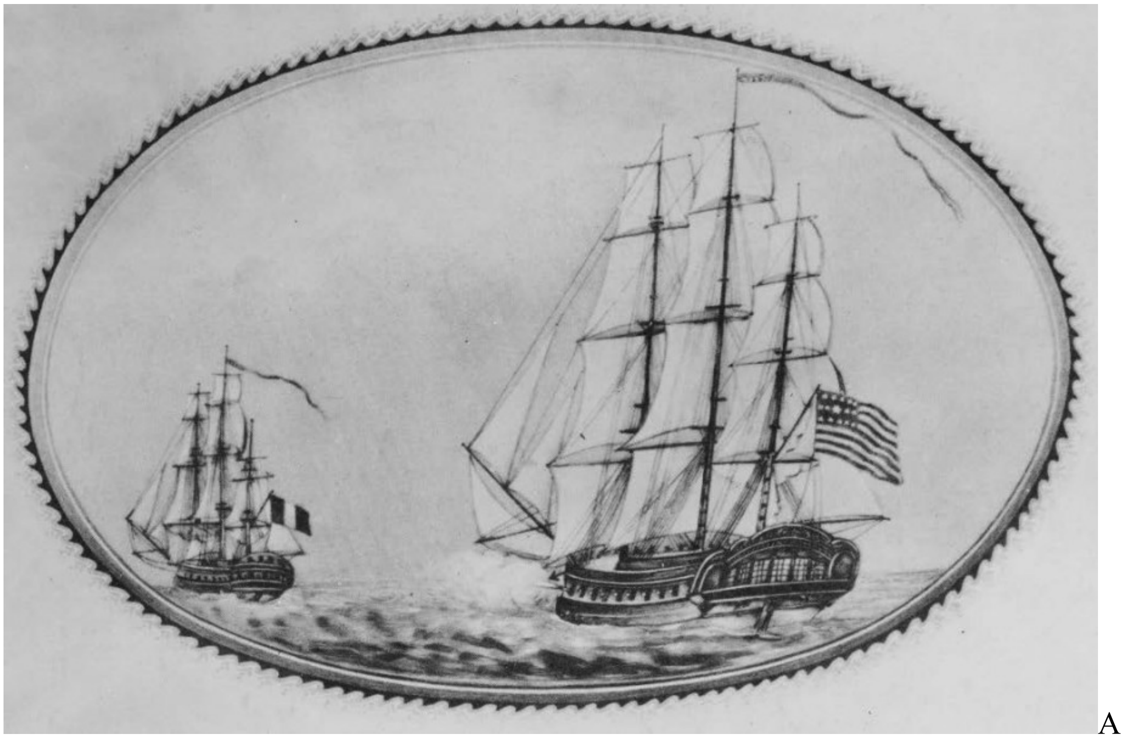
Over the course of the U.S. Navy's history the mosquito has been a constant threat whose enduring swath of destruction far extends that of the Barbary Pirates, the Imperial Japanese fleet or even German U-boats.

From the Navy's first conflict – in the so-called Quasi-War with France (1797-1801) – our small fleet was deployed to the tropical climes of the West Indies where they engaged in warfare with French privateers.

Medical logs from these first Navy ships are full of cases of "Ague," "Fever and Ague," "Bilious Fever," "Inflammatory Fever," "Intermittent Fever," "Remittent Fever," and "Putrid, Malignant Ship Fever" – all archaic terms for mosquito-borne illnesses.

The story of the armed merchant ship USS Delaware offers an example of the impact mosquitoes had in the Quasi- War. On an unseasonably warm day in December 1799, the Delaware limped into the port of Curacao with its crew incapacitated with "fever."

Over the next month some 130 members of the ship's complement—a staggering 72 percent of the crew!—was infected with this fever. The ship's physician, Surgeon's Mate Samuel Anderson, described attending to patients under a stale air punctured by the "offensive effluvia" of bilge water. This was an age when some diseases were still associated with atmospheric conditions, noxious vapors and "miasma" ("pollution" or "bad air.")



Anderson established a temporary hospital on shore where his patients were exposed to more “salubrious conditions” and subject to the standard practices of the day—a combination of purgatives and bloodletting.

Although, the concept of Germ Theory and the idea of mosquito-transmitted diseases were still decades away, Anderson came very close to identifying the cause of the malady. He prophetically noted that among his patients: “Eruptions of various kinds appeared. That which was most common and struck my attention most, was in every respect similar to musquitoe [sic] bites.”

Throughout the history of the world the ancient creature called the mosquito has been the scourge of humankind, spreading more illness and causing more death with a simple bite than any other living organism past or present.

In 2014, The Gates Foundation identified the mosquito as the “deadliest animal” in the world causing more deaths a year than sharks, snakes, and humans combined.

Of the more than 3,000 species of mosquito, three can be credited as the most proficient killers—the female of the Aedes, Anopheles, and Culex genera.

These little mosquitos are responsible for transmitting a host of viruses including Chikungunya, Dengue, Japanese Encephalitis, Malaria, West Nile, Yellow Fever, and most recently Zika.

The World Health Organization (WHO) estimates that each year hundreds of millions of people are infected with these diseases and several million die.

Next time, we will be focusing on the tiny death-dealer and the Navy’s own plight against it—from an early medical investigation into a mosquito-borne disease (1823) to the epidemics that shaped the service to the unsung mosquito fighters who pioneered the concepts of prevention, education and research.

It is a fight that is as old as the Navy itself and one marked by many hallmarks, innovations and heroics.

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Written on August 31, 2016 at 7:00 pm by Navy Medicine

The Mosquito Fighters: A Short History of Mosquitoes in the Navy – Part 2

Filed under Force health and safety, Health, Navy Medicine History {no comments}

By André B. Sobocinski, historian, BUMED

> When you … arrive at Thompson's Island you will investigate with utmost care the origins, progress and present state of the sickness which prevails on the island and in the Squadron."
>
> ~Secretary of the Navy Samuel Southard to Commodore John Rodgers, October 1823

When the United States acquired the Spanish colony of Florida in 1821, Key West was nothing more than a sleepy fishing village known as Cayo Huesa ("Bone Reef"). Seeing the strategic value of the property, the Navy took control over Key West in March 1822 and renamed it "Thompson's Island" in honor of the Secretary of the Navy, Smith Thompson.

For a time, Thompson's Island was the home of the Navy's West Indies Squadron and its base of operations in a campaign against the last vestige of Caribbean pirates. It was not long however before disease overtook piracy as the greatest threat to the squadron. In 1823, Thompson's Island served as the site for one of the first military medical investigations into the cause of Yellow Fever.

Vintage sketch of Key West, Ca 1830s. Courtesy of the Naval History and Heritage Command

The trouble began on August 19, 1823, when a Sailor from USS Decoy came ashore suffering muscle aches and gastrointestinal pain. The doctor on duty found the Sailor's skin cool and clammy; his respiration short, his vomit black and "yellowness was diffused over his face, neck and breast."

The fever soon spread throughout the island. Within a week over 30 Sailors and Marines were stricken with Yellow Fever. Even Commodore David Porter, commander of the naval station, was reported to be in a "state of great debility."

September 21, the new Secretary of the Navy, Samuel Southard reported to President James Monroe that 11 Sailors had died on Thompson's Island and at least 21 others, including the station's surgeons, were sick.

Southard ordered a special Navy mission to Thompson's Island to investigate the causes of the fever. Commodore John Rodgers, USN, would oversee the medical task force comprising three of the Navy's most accomplished physicians—Surgeons Thomas Harris, Richard K. Hoffman, and Bailey Washington. Each was assigned to Rodgers aboard USS Shark.

Surgeon Bailey Washington, USN, one of three Navy physicians investigating the cause of Yellow Fever. Washington and his medical team identified temperature and "continued annoyance" of mosquitoes and two of the likely causes. Courtesy of the Smithsonian American History Museum

Rodgers and his medical task force arrived on the island October 23, 1823, only to discover that Commodore Porter and much of the station had fled. Of the 140 Sailors and Marines remaining, 59 were sick with fever, several of whom were being treated at the hospital under the care of Surgeon Thomas Williamson, USN. Rodgers noted that the fever had become quite mild but also the Sailors had become quite unruly in Porter's absence.

Surgeons Harris, Hoffman, and Washington walked the island studying every topographical feature and collected clues with the thoroughness of forensic scientists. They noted that over half the island was covered in salt water and fresh water ponds, the latter being covered with decomposing vegetable and animal matter; they suspected the resulting "miasma" (literally "bad air") would have had a powerful effect on the populace and their health.

The surgeons drafted a report to Secretary Southard October 29 outlining six causes of Yellow Fever—sudden exposure to tropical climates; lack of comfortable quarters; intemperate habits; lack of fresh and wholesome provisions; "continued annoyance" by mosquitoes and sand-flies; and so-called "depressing passions," arising from the prevailing epidemic.

Harris, Hoffman, and Washington had gone as far as medical science could without pinpointing the mosquito as the sole cause of the epidemic. More interesting, the surgeons noted that the disease only seemed to be present when the temperature exceeded fifty degrees. It could be argued they were just twelve degrees away from a significant breakthrough. Mosquitoes will not bite when the temperatures drop below 62 degrees Fahrenheit.

Although the fever on the island subsided as the weather cooled, at least 21 officers and an untold number of enlisted, died from the disease. The surgeons suggested that the fever would more than likely return to the island as the temperatures grew warmer. President James Monroe later praised Commodore Rodgers and the "skillful" [sic] surgeons in his address to Congress in December 1823.

The future of the naval station remained in question until another Yellow Fever epidemic lead to a string of agonizing deaths in 1824. May 24, 1825, Secretary Southard ordered Commodore Lewis Warrington, the new Commander of the West Indies

Squadron, to relocate to a West Florida town called Pensacola. A year later, in December 1826, the Navy officially disestablished its base on Thompson's Island.

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The Mosquito Fighters: A Short History of Mosquitoes in the Navy – Part 3

Filed under Health, Navy Medicine History, Public Health {no comments}

By André B. Sobocinski, historian, BUMED

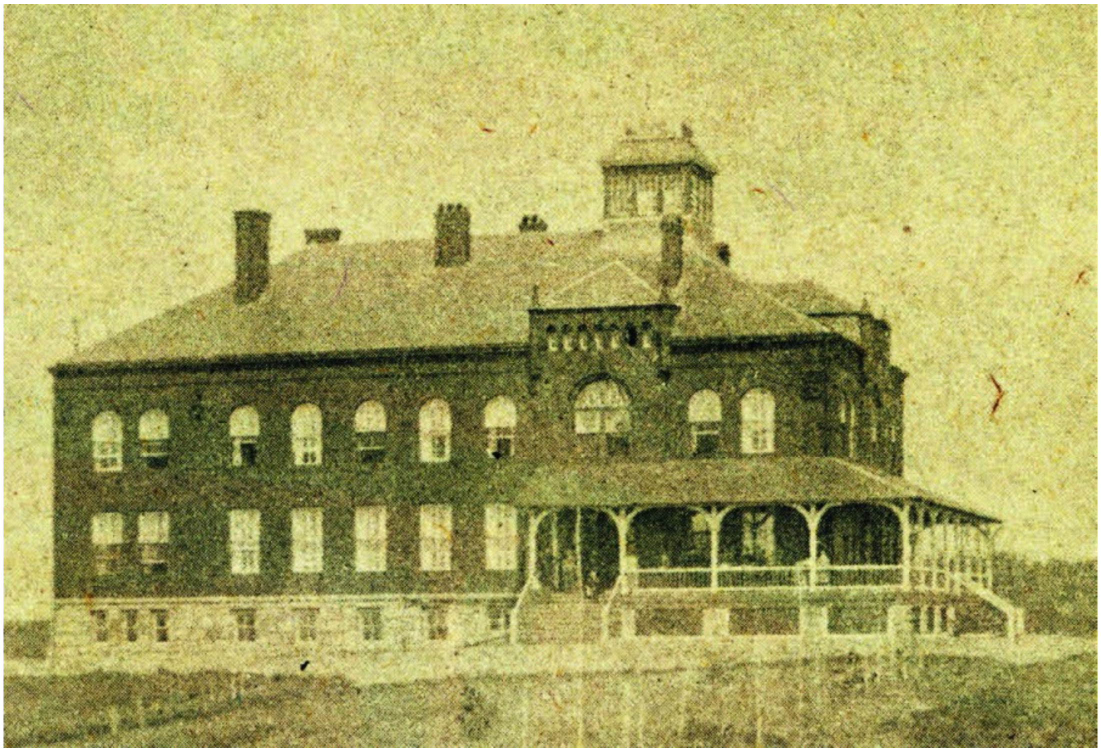
> "Dryness, coolness, fresh air, sunshine, cleanliness of body, clothes and bedding, good food, pure water, temperance, refreshing sleep, occupation exercise, cheerfulness, and contentment of mind…"
>
> ~A Recipe for Good Health by Medical Inspector Albert Gihon, USN, 1871

For much of the nineteenth century the United States was losing a war to an overlooked threat. Even as casualties by gunfire, cannon and sword mounted over the course of the century's conflicts, the proboscis of a disease carrying insect would prove the deadliest weapon of them all.

In the Mexican War (1846-1848), an estimated 13 percent of U.S. forces (11,000) died of disease, chief among them Yellow Fever. At the U.S. Naval Hospital on Salmandina Island, naval surgeons were overwhelmed with Army, Navy and Marine Corps victims of the yellow scourge; many including the Navy's senior physician in theater—Fleet Surgeon John A. Kearney—would die from the disease.

Disease would account for two-thirds of Union and Confederate deaths in the Civil War (1861-1865); 30,000 of these were the result of malaria alone.

Generations before the microbe hunters and long before mosquito control was a preventative measure, military surgeons treated mosquito-borne illnesses with the tried and well-meaning methods of their day. Typically, these were Mercury-based purgatives/emetics, venesection, and blistering/cupping—all based on ancient theories of bodily humors and temperaments; and all were designed to rid the underlying cause of disease.



Naval Hospital Widow's Island, Maine, ca. 1900. For much of the nineteenth century patients suffering mosquito-borne disease would be sent to a special quarantine facility for treatment. In 1887, the U.S. Navy opened a quarantine hospital on Widow's Island for Yellow Fever patients. Soon seen as obsolete, the hospital closed in 1901 without ever having treated a patient. The hospital was ceded to the state of Maine in 1903 where it was used as a psychiatric asylum.

In his 1854 textbook, *Diseases and Injuries of Seamen*, Navy Surgeon G.R.B Horner advised treating Yellow Fever by first evacuating the stomach and bowels with Ipecac, castor oil, blue mass (*mercury, licorice, rose* *honey, althaea, and glycerol*), rhubarb, or grains of calomel (*mercuric chloride*) and jalap (*a poisonous root*). More than sixty years earlier, Dr. Benjamin Rush had advocated the very same treatment of calomel and jalap (known as the "10-10 treatment") to purge victims of the 1793 Yellow Fever Epidemic in Philadelphia.

Quite understandably, dehydration would prove a significant problem for patients being treated for the disease. Navy doctors typically counteracted the ensuing dehydration with everything from tamarind water and weakened Chamomile tea to lemonade and orange juice.

For fever, Dr. Horner recommended the application of cold water to the brow, but also the ingestion of ammonium acetate, potash (*potassium carbonate*) as well as tartar emetic (*antimony potassium tartrate*)—all of which had "fever reducing properties."

A popular treatment for a host of other ailments, tartar emetic would be used for everything from parasitic diseases like shistosomiasis to alcoholism well into the twentieth century.

Venesection or blood-letting was a common practice used by many ship surgeons during the early stages of febrile diseases. This practice would fall into increasing disfavor throughout the century.

Even by the early nineteenth century, very few Navy doctors ascribed to Dr. Rush's practice of bleeding fever victims 10 to 12 ounces during a sitting.

In his book *Physician for Ships* (1820), Surgeon Usher Parsons asserted that it was only "advisable to draw a small quantity of blood in the first twelve hours," and the practice should be abstained from after this. In case of severe headache associated with the fever, Parsons advised application of leeches to the temples.

Narcotics like laudanum (*alcoholic solution containing opium*), black drop (*opium, vinegar, and sugar*) and Dover's Powder (*Ipecac and opium*) were typically used as analgesics as well as for bouts of "irritable stomachs" and insomnia. To "quiet" the unsettled stomach, Parsons stood by his recipe for an "effervescing mixture" that contained lemon juice, water, potash, and laudanum.

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